

PROBLEMS, OBSTACLES AND COMPLICATIONS IN A CONSECUTIVE SERIES OF MORE THAN 400 NAVIGATED MODULAR SHORT STEMS IN HIP ARTHROPLASTY.

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INTRODUCTION

Computer-assisted surgery (CAS) has been introduced in hip replacement to improve the precision of the acetabular and femoral components and hopefully to improve prosthesis longevity and biomechanics. Likewise the concept of shorter “neck-sparing” femoral stems has been gaining in popularity. These new designs preserve more native bone in the femoral neck of the patient during femoral preparation and theoretically the association to a modular neck could assure a more anatomical hip reconstruction. First aim of the study was to assess difficulties and adverse effects and their incidence in more than 400 CAS total hip replacement (THR) using a modular short stem (Metha, BBraun, Tuttlingen, Germany) performed in one center since 1999: Second aim of the study was to determine if computer assisted hip replacement, despite better final implants alignment, has to be considered as a demanding surgical technique because of an higher number of adverse consequences compare to traditional techniques.

MATERIAL AND METHODS

Since 2006 more than 511 computer assisted hip replacement using a short modular stem (Metha, BBraun, Tuttlingen, Germany) were performed in our department. 405 implants were followed for at least 6 months postoperatively and included in the study. All the surgeries were performed by 5 different surgeons with a minimum experience of at least 25 CAS THR and always assisted by the most 2 experienced surgeons in CAS. All the cases were divided in 3 series according to when the surgery had been performed to consider the evolution of the navigation systems and the familiarity of the surgeons with this technological improvements (group A ranging from 2006 to 2008, group B ranging from 2009 to 2011 and group C ranging from 2012 to 2014). The mean surgical time was assessed from the surgical charts even in relation to the period when the surgery had been performed. All intraoperative problems (difficulties that required no operative intervention to resolve or without any consequence on the navigation process), intraoperative obstacles (difficulties that required operative intervention or that caused a failure of the navigation process) and complications (intra-operative injuries and all the problems following in the first 6 months

postoperatively) were registered. Adverse facts not directly caused by the surgical but derived by other conditions were excluded from the study. A statistical analysis (non parametric tests) of the results was performed comparing all the 3 groups.

RESULTS

There were 91 cases in group A, 142 cases in group B and 172 case in group C In all the series we did not registered any failure of the implants because bad implant positionament or instability within 6 months postoperatively. There were no significant differences in number of total problems and complications among the 3 groups ($p:0.09$). The total sum of adverse effects (Problems +Obstacles+Complication) was statistically higher in group A compared to the others 2 group associated to a significant higher incidence of navigation failures. Addressing any single adverse fact we did not registered any statistically significant difference in the number of septic THR (complication) and incidence of superficial pin site infections (complication) between the 3 groups in the first 6 months post-operatively. One case in group A had been to be successfully revised because a proven metal allergy in group B. In groupA we registered 2 cases of partial of the lateral cutaneous nerve in group A. We registered 8 cases of proximal femur fractures (4 in group A, 2 in group B, and 2 in group C) and 4 stems were revised intraoperatively with a longer one 2 were fixed with metallic cerclages/cables and 1 just with a restriction of weight-bearing. Likewise in 1 cases in group A registered an acetabular fracture during cup impaction managed conservatively with restriction of weight-bearing. No abnormal intra operative or post operative bleeding was registered because of the surgical technique in all 3 groups. No statistical difference in clinical evident DVT among the 3 groups was detected in the first 6 months postoperatively. Surgical time was longer in group A (114,1min) with a statistical significant difference in group A compared both to group B (97,9 min) and C (88,2min).

DISCUSSION

Combination of navigation and new short modular neck preserving stems could represent a new frontier in hip arthroplasty. Likewise a more accurate component positioning together a bone preserving technique could guarantee both longer survivorship and easier revision. In this study evaluating a large implant series with different navigation softwares the authors registered both a higher rate in navigation failure and longer surgical time in the earlier cases even because of less advance navigation systems and lower experience with both CAS and implants. However in a series of more than 400 CAS THRs using a modular short femoral stem the authors could demonstrated no increased rate of complications compared to traditional techniques.

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